



## TRAFFIC SPRED REPORT NO. 85

To: G. A. Leonards, Director Joint Highway Research Project November 28, 1967

File: 8-3-3

From: H. L. Michael, Associate Mirector Joint Highway Research Project

Project: C-36-100

The attached fragress Report No. 85 on Fraffic Speeds is the report of the 1967 study of free-flowing automobile and truck speeds on rural, tangent, Level sections of Interstate, other 4-lene and 2-lane highways in Indians. The study and report have been performed by Mr. Salim S. Hejel, a Graduate Assistant on our staff under the direction of Professor Michael.

The results indicate continuing increasing speeds for both automobiles and trucks. The results also indicate that the change of truck speed limits to automobile speed limits did not result in an increasing rate of increase in truck speeds. The same increase in truck speeds occurred thin year as occurred leat your when no change in speed limits occurred.

Copies of this report are requested for release to the Indiana State Police, the Indiana Traffic Sefery Council and the Indiana Office of Traffic Sefery as is nownl procedure for these reports. Copies will also be sent to the Execut of Public Reads and research Departments within the ISBC. The report is presented for the record and for release as noted.

Respectfully submitted,

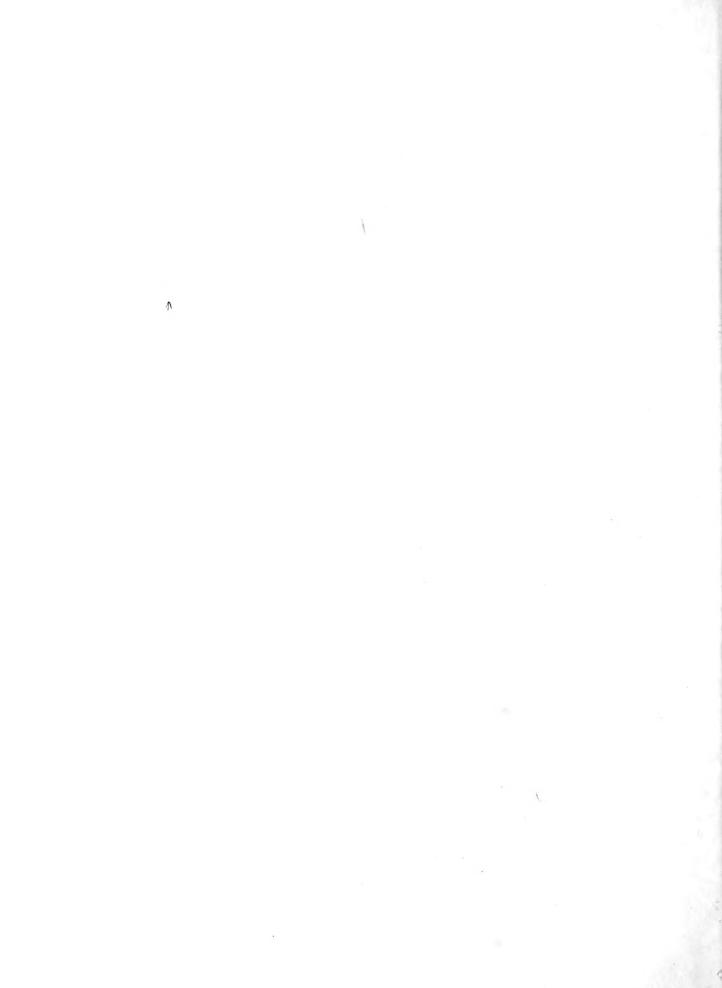
Marcia L. Michael Associate Director

Thompsell & Trackers

BIM STOP

Attachment

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# Progress Report

TRAFFIC SPEED REPORT NO. 85

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Salim S. Hejal Graduste Assistant

Joint Mighway Research Project

File Nes: 8-3-3

Project Ross Co36-103

Purdue University Lefayette, Indiana November 28, 1967

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## ABSTRACT

This report is the annual continuing study of the speeds of vehicles on rural Indiana highways. Observations of spot speeds were taken on interstate, other four lane, and two lane highways throughout the state during the manths of August and September, 1967.

Analysis of the speeds showed the over-all average speed for passenger cars was 64.5 miles per hour. The over-all average speed for trucks on the three type; of Dighways was 55.0 males per hour.

These everage spect values showed an increase from the values measured in the same period the year before. In fact, these everage overall species of passenger care and thucks reported in this study for 1967 are the highest which have been found to date in this continuing study in progress for ever 20 years.

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			77.20
			17.7
			70.7
			100
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			10000
			- 1
			A TOTAL
			4

## TRAFFIC SPEED REPORT NO. 85

This report is an enalysis of spot speed observations made during August and September 1967. All observations were made of three-flowing vehicles on level, tangent sections of rural Indiana highways during daylight and under favorable weather conditions. The same locations on selected Federal and State highways as used in previous years were used again, except in two cases. Stations I and 10 were relocated to new locations on two different highways. Ald Station I on I-80 was no longer representative of rural conditions and the station was neved to Z-69.

Old Station 10 on U. S. 52 was no longer representative of two Lune highways because the highway had been reconstructed as a four lane divided highway. A new station was relocated to S. R. &J. Stations were classified as a two lane, four lane, or interstate highways. A representative sample of traffic speeds was obtained at each of the four stations in each classification. The specific sits of each station was as follows: (see Migure 1.)

# Interstate Highways

1. I-69 3.3 Miles South of Junetice of 7.	l.	L=69	3.3	in les	South	OF	June them	المارية المارية وأنوا فيدية	7,	Ro	18
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- 2. I-65 1.0 Mile West of Junctice of S. R. 534
- 3. I-T4 1.0 Mile Bast of Junction of Post Road
- 4. I-65 2.9 Miles Worth of Junction of 3. A. 160

# Forc Lanc Highways

- 5. U.S. 31 1.2 Miles South of Superior of S. R. 38
- 6. V. S. 52 1.0 Mile Anst of Junctice of S. R. 23
- 7. V. S. 41 1.0 Mile North of South Suntain of S. R. 2
- 8. U. S. 52 1.0 Mile West of Klomike

				10.70
				30
	*			

# Two Lane Highways

9. T. S. 41 1.0 Mile Worth of Poswell

10. S. R. 43 2.0 Miles Morth of Chalmers

11. V. S. 31 3.0 Miles South of Rochester

12. S. R. 25 0.7 Miles West of Americas

The vehicles were classified as passenger cars or trucks. Passenger cars were further classified into two groups - Indians or Non-Indians and the analysis was performed as thus classified and combined. The trucks were also classified into two groups - Light (less than 5000 pounds gross weight) or Heavy (equal to or more than 5000 pounds gross weight), and again the analysis was performed as classified and combined.

The speed limits in Indiana are as follows: 70 miles per hour on interstate highways and 65 miles per hour on other highways, if not otherwise posted. This is the first year that truck speed limits were the same as passenger cars. The stated speed limits were applicable at all interstate, four lane, and two lane stations of this study.

# Equipment and Field Precedure

Each constructions for this report were distained by use of an "Electromatic" Radar Speed Meter, built by Automatic Signal Division, Eastman Industries, Inc., East Morwalk, Commerciate. The nates was placed approximately four feet from the edge of the pavement at an angle less than 10° with the highway center line. Speed inaccuracies are negligible at small angles (less than 10°) and therefore, corrections for angle were urnecessary.

At the beginning of the study the accuracy of the mater was checked with the cooperation of the State Highway Poidce. A constant discrepancy of minus one mile per hour was found and hence all readings of speed were corrected accordingly.

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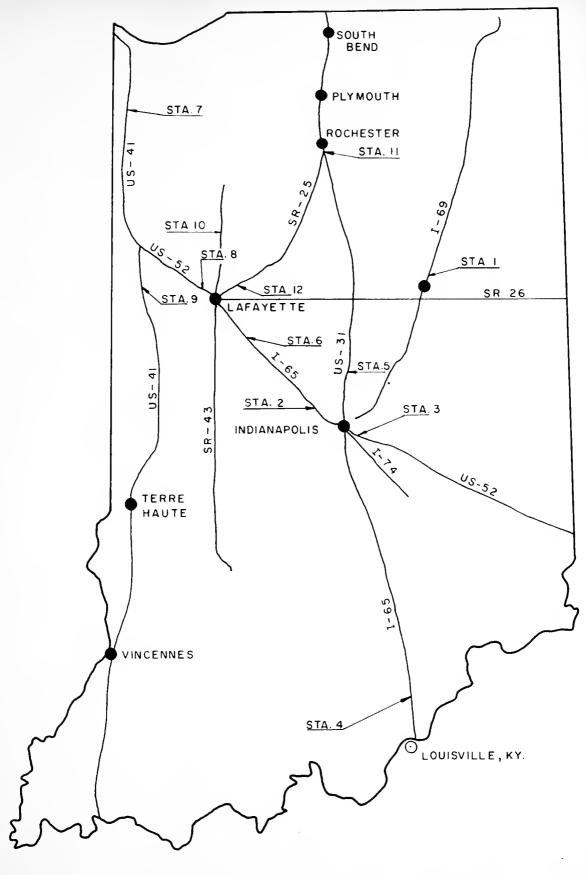
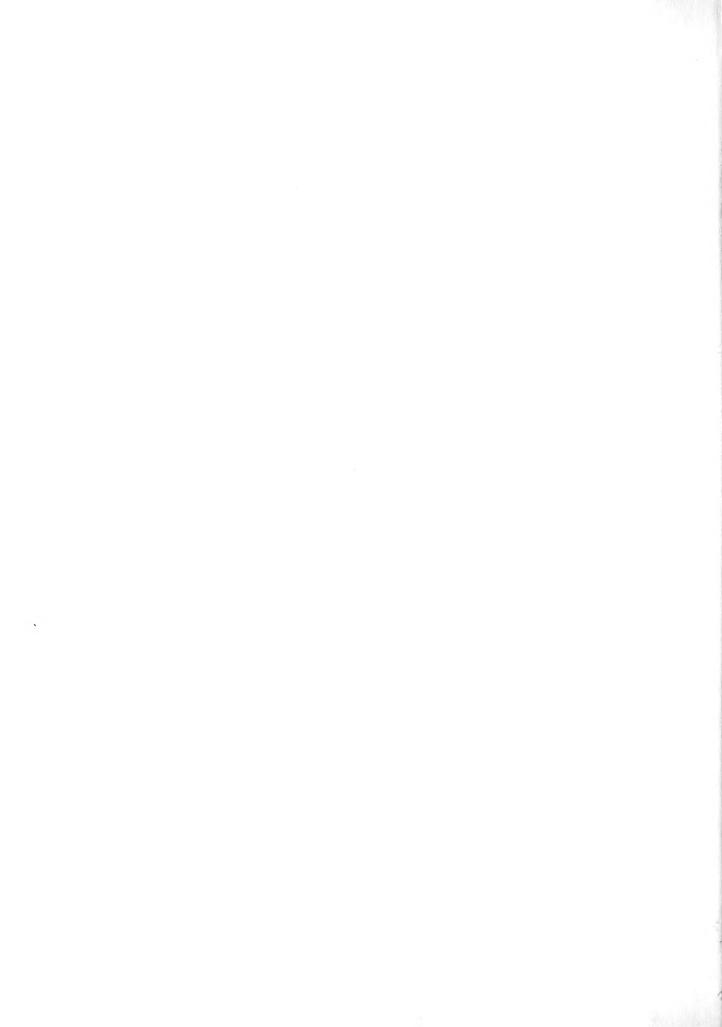


FIG. A - LOCATIONS OF SPEED-STUDY STATIONS



# Results of Amalysis

The data collected was analyzed and is summarized in Wables 1 to 12 in the Appendix. Tables 13, 14, and 15 summerize the data for the three types of facilities: Interstate, four lane, and two lane. Table 16 is the summary for all facilities observed.

Figures 1 to 16 in the Appendix show the accumulative speed curves for each of the stations studied.

The results of this study and the studies conducted since 1957 are tabulated in Table A and shown graphically in Figure 3.

The average speed for each classification of vehicles on each type of highway for this study was as follows:

		NOW LANCE	Par Lang
Presence care			
Indiana	66	54.3	61.0
Neu Inciena	<b>68</b> <sub>2</sub> 3	55T	61.9
85 percentile (cil)	7367	70.4	68.2
STATE OF THE STATE			
less than 5000 lbs.	60.0	37.0	53.9
5000 lbs. or more	<b>5</b> 6.9	3401	51.9

The percent of vehicles exceeding the speed limit for each classification of vehicle and each type of highway was as follows:

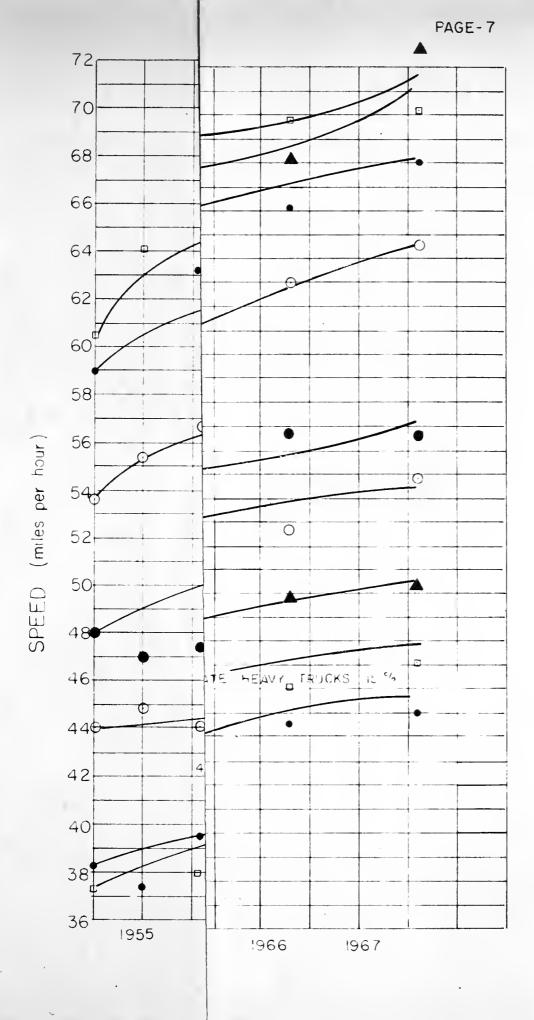
	Internation	FAD ICAS	Two land
Presenter care:			
Indiana	23.5	<b>38</b> .8	23.6
Non-Indiana	33.2	45.1	23.5
Princis :			
less than 5000 lbe.	8.7.	8.6	k.A
5000 lbs or more	0.0	1.0	0.8



The paperno of valuates or residing 5 miles per hour or more above the speed limit for even sain was as follows:

	The state of the s	Frank Laste	
I assinger onre-			
The state of the s	7 e 12	and the	900
8.22-Inda.210	3.0.8	The state of the s	8.7
The All			
Part APEA 9000 (FOR	1.4	3. 1	1.9
	^)	The state of the s	Q









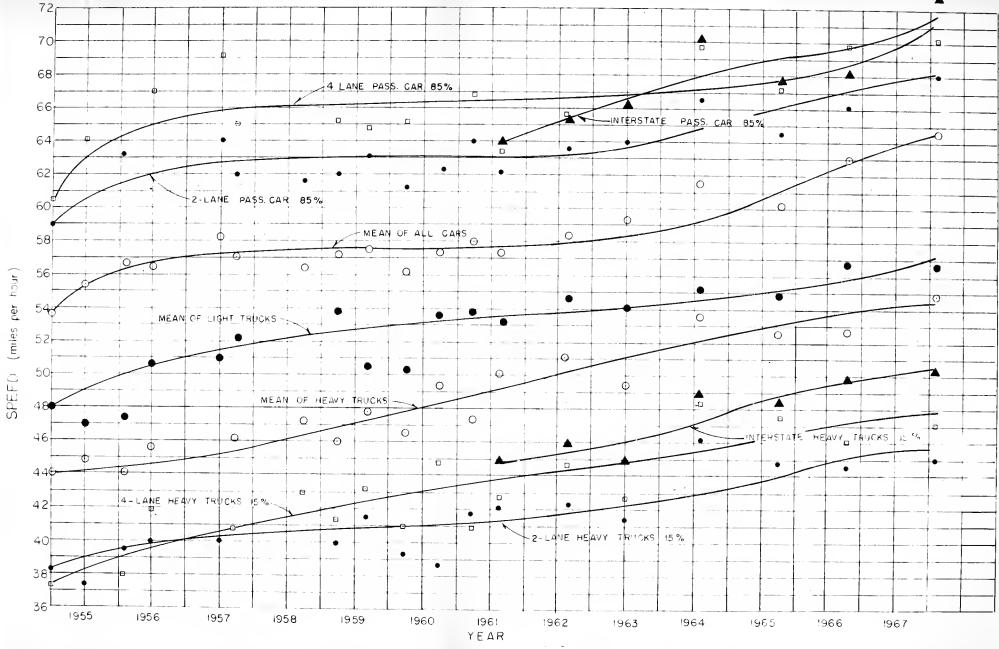


FIG. B - INDIANA RURAL SPEED TRENDS 1955 - 1967

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			-3
			*

# Symmetry and Conclusions

The everage speeds in this study were found to be 2.5 miles por nor higher for personager cars and 1.5 miles per hour feater for careful and the results of the previous year. This large increase the probability is to the following reasons:

- hour increase over list year for passenger care out to a less, then increase for those of the previous of think I make out to a less, then congested when as then with a posted open librar of the place of the factor of the factor of the factor of the last of the factor of the last of the factor of the last of the factor of the factors of th
- 2. The to recover decide one while year lower content of the opening from the province of the first elements from the content first element.

trucks was important or 15 mages, to the speed introduct a commodition on the highways of from since the speed study of the real no engage increase occurred to nother truck speeds. Of control to the angle of the class breaking the speed limit decreased sharply. The course is the applicable of trucks an extent speed appears to be applicable.

Or in other words, thunks traveled at speed appears to be applicable safe, irrespective of general speed limits. The facility processage of automobiles visited by correct askings appear their traveled to appear the statement than the control indicate speed limits.



ITENDEN



### Determination of Sample Size

It was desired that a 95% confidence interval of the true mean of the speeds of passenger cars should not be wider than two miles per hour. For trucks weighing 5,000 lbs. or more a 95% confidence interval with a four mile per hour band was desired.

Assuming a normal distribution of speeds and using the standard deviation of the grouped data of the 1966 study, the minimum sample size requirement was determined by:

M = sample size required

t = vabulated "t" value for 5/2 significance

S = estimated standard deviation

Le width of the interval

For passenger cars:

$$N = \left[ \frac{2 \pi 1.95 \times 6.58}{3} \right]^2 = 182 \text{ observations}$$

For trucks:

# Mote

At all stations more than 19% passenger car observations and 4% truck observations were obtained for the study reported herein.



TABLE \_\_ SPEED DATA

	No. Very Cloydy		5000 pounds	Present	73	56.82	5.12	0.0	0.0	0.0	0.0	2.7	6.9	32.9	65.8	95.9	100.0	100.0	100 0	100.0	100.0
	7.0		500	Last																	
R. 18	Weather (Speed Report N	TRUCKS	Less than 5000 pounds	Present	1.5	60.87	8.73	0.0	0.0	0.0	0.0	0.0	13.3	26.7	40.0	66.7	86.7	93.3	100.0	100.0	100.0
f S. F	N (Speed		1 5000	Last																	
3.3 Miles South of S.	Portland Cement Concrete Last Previous Observation Date Time		AJJ	Present	88	57.51	6.02	0.0	0.0	0.0	0.0	2.3	7.9	31.8	61.4	90,9	97.7	98.9	100,0	100.0	100.0
Mile	rete ous Obs Date			Last																	
1	at Previous Di		Non-Indiana	Present	71	68.65	6.79	0.0	0.0	0.0	0.0	0.0	0.0	2.8	6.6	26.8	53.52	81.7	94.4	100.0	100.0
Location	d Ceme		Non-In	Last																	
 	Portlan	PASSENGER CARS	Indiana	Present	169	67.38	6.55	0,0	0.0	0.0	0.0	0.0	0.0	1.8	11.2	34.9	63.9	96 4	95.9	100,0	100,00
	ace 2, 1967 12:45	PASSE	Ind	Last																	
69 I	on Surface August 22, 10:15 - 12		רנא	Present	240	67.75	6.63	0.0	0.0	0.0	0.0	0.0	0 0	2.1	10.8	32.5	60.8	85.0	95.4	100.0	100.0
æy	rvatio			Last																	
1 Highway	Anes This Observation Surface Date August 22, Time 10:15 - 12:			OBSERVATION	No. of vehicles obs.	Average speed (m.p.h.)	Standard deviation	24 m.p.h.	29 m.p.h.	34 m.p.h.		_		9 54 m.p.h.	59 м.р.h.			74 m.p.h.	79 т.р.h.	84 ш.р.h.	89 m.p.h.
Stat <b>i</b> on	No. of Lanes				No	Ave	Sta			<b>∂</b> u	iΙ	ev.	11	89	[o]	гца.	Λ J	0 9	\$		
St	No											L		ΛG	L L V						



# TABLE 2 SPEED DATA

	1			ب																	7
			pounds	Present	76	57.89	14 11	0.0	0.0	0.0	0.0	c	2.6	13.2	68.4	54.7	98.7	100 0	100.0	100.0	100.0
	No. 83		5000	Last	50	57.1	2.95	0.0	0.0	0.0	0.0	0.0	0.0	14.0	80.0	98.0	100.0	i i	R D		;
. 334	her	TRUCKS	s than	Present	19	61.05	7.67	0.0	0.0	0.0	0.0	0.0	5.3	21.1	36.8	57.9	84.2	100.0	100.0	100.0	100.0
of S. R	Weat] (Speed Re 8, 1966 - 1:00 PM		Less 5000 p	Last	24	56.9	4.92	0.0	0.0	0.0	0.0	0.0	8.3	25.0	7.99	95.8	100.0		-	1	8
1,0 Mile West of S. R.	Observation September 11:00 AM		All	Present	95	58.53	5.13	0.0	0.0	0.0	0.0	0.0	3.2	14.7	62.1	87.4	95.8	100.0	100.0	100.0	100.0
1.0 M				Last	74	57.1	3.67	0.0	0.0	0.0	0.0	0.0	2.7	17.6	75.7	97.3	100.0	;	1	1	
8	Previ		ndiana	Present	115	68.11	6.77	0.0	0.0	0.0	0.0	0.0	1.7	3.5	10.4	27.0	54.8	87.0	96.5	99.1	99.1
Location	ľ		Non-Indiana	Last	105	62.8	5.8	0.0	0.0	0.0	0.0	0.0	1.0	5.7	28.6	61.0	82.9	97.1	100.0		1
I	Portland	PASSENGER CARS	Indiana	Present	169	65.65	7.42	0.0	0.0	0.0	0.0	0.0	1.8	7.7	18,3	41.4	71.0	88.3	96.5	98.8	100.0
	e 1967 PM	PASSE	Ind	Last	134	61.8	5.5	0.0	0.0	0.0	0.0	0.0	0.0	8.2	31.1	67.2		98.5	100.0	8	
1-65	Peopf Surface August 26, 1967 1:30 - 4:10 PM		All	Present	284	66.65	7.26	0.0	0.0	0.0	0.0	0.0	1.8	6.0	15.1	35.6	47.149	88.0	96.5	98.9	2 66
way	rvatto e <u>Au</u> e 1:			Last	239	62.2	5.64	0.0	0	0.0	0.0	0.0	7.0	7.1	30.1	4.49	87.9	97.9	100.0 96.5	1	
Station 2 Highway	of Lanes This Observation Surface  Date August 26, 1 Time 1:30 - 4:10			OESERVATION	No. of vehicles obs.	Average speed (m.p.h.	Standard deviation	24 m.p.h.	29 mepohe	34 m.p.h.	ŗŢ	igu igu	at	sə		yə.	od 69 me pehe	o 74 m.p.h.	79 m.p.h.	84 m.p.h.	% mepehe
ري ب	No.	L										- L.	ţų		L L V						



RIA
SPEED
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TABLE

			5000 pounds	Present	88	57.88	1, 98	0.0	0.0	0.0	0.0	0 0	6.8	22.7	56.8	95, 5	100.0	100.0	0.001	100.0	100.0											
	No. 83		5000	Last	42	55.9	2.81	0.0	0.0	0.0	0.0	0.0	8.4	23.8	92.9	100 0	1	!	-	•	•											
		TRUCKS	Less than	Present	25	59.80	7.74	0.0	0.0	0.0	0.0	0.0	8.0	24.0	52.0	80.0	38.0	0.96	96.0	100.0	100.0											
of Post	(S) Pg # 1		Lass 5000	Last	1.7	56.5	99.9	0.0	0.0	0 0	0.0	5.9	11.8	35.3	58.8	9%	100.0	B:	1	-												
.0 Mile East of Post Road  Weather Observation (Speed Repor	Observation September 9:00 AM =														All	Present	113	58.30	5.72	0.0	0.0	0.0	0.0	0.0	7.1	23.0	55.8	92.0	97.4	99.1	00	100.0
1.0 MS	5			Last	59	56.0	4.23	0.0	0.0	0	0.0	1.7	6.8	27.1	83.0	98 3	100.0	ı	-	-	-											
Previ	Prev			diana	Present	87	68.46	7.40	0.0	0.0	0.0	0.0	0.0	0.0	3.5	12.6	28.7	50.6	82,8	95.4	97.7	98.9										
Location	nd Cement Last	PASSENGER CAPS	Non-Indiana	Last	8.7	63.1	6.53	0.0	0.0	0.0	0.0	0.0	1.2	6.9	27.6	62.1	83.9	95.4	97.7	100.0	-											
1	Portla 967 M		Indiana	Present	170	65.41	7.09	0.0	0.0	0.0	0.0	0.0	1.2		21.2	41.8	71.2	91.2	97.1	100.0	100 0											
			Ind	Last	155	61.9	5.81	0.0	0.0	0.0		9.0	9-0	7.8	29.0	70.3	89.7	97.4	100.0	1	1											
1-74	Proff Surface August 23, 19 1:30 -4:00 PM		All	Present	257	44.99	7.33	0.0	0.0	0	0.0	0.0	0.0	6.2	13.3	37 1	3.49	. 3 . 3	96	36,2	99.0											
way	- Au			Last	242	62.3	6-10	0.0	0.0	0.0	n o	7 Q	8	7.8	28.5	67.4	87.6	96.7	0.001	-												
Station 3 Highway	No. of Lanes This Observation Surface Date August 23, 1 Time 1:30 -4:00 P			OBSERVATION	No. of vehicles obs.	Average speed (m.p.h.	Standard deviation	24 m.p.h.	29 mepohe	24 mepeho	ŢŢ	E SAG	14 to mo p. h.	89		ер	3t 69	0 74 meyene	79 m.p.h.	84 m.p.h.	oh•p•h•											



TABLE 4 SPEED DATA

	(-2)		5000 pounds		109	9 55.59	5.98	0.0	0.0	0.0	0.0	4.6	12,8	8 38.5	1 72.5	.0 96.3	99.1	100.0	100.0	100.0	100.0
	No. Good		32	Last	46	54.9	3.9	0.0	0.0	0.0	0.0	2.2	6.5	47.8	89.1	100.0		1	- !		
	ather Report 66	TRUCKS	Less than	Present	21	58.52	6.53	0.0	0.0	0.0	0.0	0.0	14.3	23.8	52.14	85.7	95.2	100.0	100.0	100.0	100.0
	Ne (Speed er 7, 19		Less	Last	21	56.1	7.59	0.0	0.0	0.0	0.0	8 7	19.0	42.9	66.7	90,5	95.2	100.0	4		
Location 7.5 Miles North o	Concrete Previous Observation ( Date September Time 8:30 - 11:		ALL	Present	130	56.06	6.15	0.0	0.0	0.0	0.0	3.9	13,1	36.2	69,2		98.5	100,0	100.0	100.0	100.0
				Last	67	55 3	5,32	0.0	0.0	0.0	0.0	3.0	10.5	46.3	82.1	97.0	98.5	100.0			1
	Portland Cement Concre Last Previou		diana	Present	125	68.28	7,02	0.0	0.0	0.0	0.0	0.0	0.8	4.8	80	29.6	52.8	82.4	96.8	99.2	100.0
			Non-Indiana	Last	108	6 79	5.93	0.0	0.0	0.0	0.0	0.0	0.0	00	18.5	45.4	77.8	7.76	97.2	100.0	
		SSENGER CARS	Indiana	Present	145	67.37	6.01	0.0	0.0	0.0	0.0	0.0	0.0	2.8	8.3	33.1	64.8	87.6	97.9	100.0	100.0
	e 1967 15 AM	PASSE	Ind	Last	123	63.4	6.21	0.0	0.0	0.0	0.0	0.0	1.6	6.5	27.6	53.7	79.7	97.6	99.2	100.0	
	This Observation Surface Date August 23, 1 Time 8:50 - 11:15		AL.	Present	270	67.79	6.50	0.0	0.0	0.0	0.0	0.0	0,1	3.7	8,5	31.5	59.3	85.2	97.4	9,66	100.0
				Last	231	54.1	6.11	0.0	0.0	0.0	0.0	0.0	6		23.4	8.6	78.8	1.96	98.3	0.00	
1on 4 Highway	No. of Lanes This Obsert Date Time			OBSERVATION	No. of vehicles obs.	Average speed (m.p.h.	tion	24 m.p.h.	29. m.p.h.	34 m.p.h.		ave the menopho		8 8 54 m.p.h.		6/+ ш.р.н.	ы 69 m.p.h.	74 m.p.h.	79 m.p.h.	84 m.p.h.	39 шр. р.
Station	No.		All vehicles																		

TABLE 5 SPEED DATA

1.1			4																	7
(——)		00 pounds	Present	53	53.02	6.51	0	) (	0.0	1.0	0 11	30.2	60.4	70.3	98.1	100.0	90	100.0	100.0	100.0
No. Cloudy		5000	Last	63	51.3	4.93	0.0	0.0	0.0	1.6	8 7	38.1	24.6	95.2	100.0		!		1	
T.	TRUCKS	than pounds	Present	1,9	6Z Z3	1,6.7	0.0	0.0	0.0	0	3	20.8	33.3	5,11, 2	7.1	95, 8	0.001	100.0	0 001	0.001
of S, R, 38 Weather 7 (Speed Report 7, 1966	E	Less 5000 r		28	59.1	7.40	0.0	0.0	0.0	0.0	3.6	7.1	21.4 3	46,4	75.0 7		96.4	100.001		
1.2 Miles South of S. E. 38  Weather  Lous Observation (Speed Repx  Date October 4, 1966  Time 12:30 - 3:30 PM		All	Present	101	.5.29		0.0	0.0	0.0	0 0		25.7	h7 c	32		0.80	100.0	0.001	100.0	0.001
2 Miles			Last	91	53.7	6.82	0.0	0 0	0.0		. 7	28.6	58.2		92.3	6	98.9			
Concrete Last Previous Date		Non-Indiana	Present	42	67.36	6.08	0.0	0	0.0	0 0	0.0	G	0.0	7. 8	31.0	56.7	88		97.6	100.0
Location Asphaltic Concrete Last Prev		Non-Ir	Last	35	63.9	7.72	0.0	0.0	0.0	0.0	0 0	5.7	14.3	28.6	42.9	77.1	97.1	100 0		
Asphe	PASSENGER CARS	Indiana	Present	201	64 5	6.99	0.0	0.0	0.0	0.0	1.0	2	5.C	19.9	148.3	79.1	9/	57.5	99.1,	100.0
race 22, 1967 5:00 PM	PASSE	Ind	Last	225	62.8	7.48	0.0	0.0	0	6.0	1.8	6.7	10.7	28.9	57.8	80.9	95.6	98.7	100.0	
U.S. 31 logf Surface August 22, 19 2:20 - 5:00 Pl		AL	Last   Present	243	ונ			0.0	0				1	5	45.3	75.9	02 1		~	100.0
way rykee e A			Last	260	62.9	7.51	0.0	0.0	0.0	0.8	1.54	5.0	11.2	28.9	55 8	80.4	95.3	98.9	100.0	1
Station 5 Highway U.S.  No. of Lanes This Observation Surface  Date August 22,  Time 2:20 - 5:00			OBSERVATION	No. of vehicles obs.	Average speed (m.p.h.	Standard deviation	24 m.p.h.	29 m.p.h.	34 mepoho	ιţŢ	ove Ter	T.		rcŢ	73 10 149	rd 69 m.p.h.	0 74 m.p.h.	79 m.p.h.	84 m.p.h.	% mepehe
Stat		1		L																

	*

TABLE 6 SPEED DATA

			gpt	ent		5	00											9	0		0
			pounds	Present	90	0 1	5 78	0.0	0	0	-	7 7	12.2	35.6	70.0	95,0	98.9	1000	100.0	100.0	100.0
No.			5000	Last	7	53.0	23	0.0	0.0	9	8 7		22.2	57.1	85.7	100.0				1	
her	12:15 PM	TRUCKS	Less than	Present	20	58 31	7.99.	0.0	0.0	0.0	0 0	0.0	15.0	40.0	55.0	30.0	0.06	100 0	100.0	100 0	100.0
	1 1		Less	Last	17.	58.6	6 03	0.0	0.0	0	0.0	5.9	5.9	17.7	52,9	82.4	0.00 0.001		1	-	1
ton 1.0 Mile East of S.  tic Concrete Last Previous Observation (S	- AM 00:01		A11	Present	110	5, 35	.27	0.0	0.0	0.0	0	3.0	12.7	30.4	07.3	92.7	97.3	100 0	0.001	100 0	100.0
te O Mile				Last	80	54.2	49.9	0 0	0	0	0	10.0	18.8	48.8	78.8	96.3	100.0	1		-	
Concr	7		Non-Indiana	Present	12',	66.02	5 36	0.0	0			0.0	0 0	1,0	10.4	3,	75.2	96.3	98.h	100.0	100.0
Location phaltic Last			Non-L	Last	66	65.03	5 75	0.0	0	0	0.0	0.0	0.0	3.0	16.2	48.5	77.8	96.0	99.0	100.0	1
	ьм	PASSENGER CARS	Indiana	Present	121	65.47	6.14	0.0	0	0.0	0 0	1.	7	1.5	12.1	38.7	75.0	96.0	100.0	0.00 100.0	0.001
52 e 1967	12:50 PM	PASSE	Ind	Last	142	65.0	6 75	0.0		0 0				7.8	15.5	43.0	76.1	93.0	98.6	100,0	
U.S. 52 Proof Surface August 26, 1967	10:30 AM -		ALI.	Present	249	65, 75	1 7%	0.0	0	0.0		(C)	0.3	14 13	11 2	37.0	71	9.1	99.2	0.0010.00	100.0
way rTYPE - Au				Last	170	65.0	35	0 0	0.0	0 0	0 0	7	8	8	0	45.2	76.8	94.2	8 86	0.00	
tion 6 1	TIme			OBSERVATION	No. of vehicles obs.	Average speed (m.p.h.		24 m.p.h.	29 m.p.h.	34 m.p.h.	ijŢ	T T S T S T S T S T S T S T S T S T S T	11	sə		чә	a 69 m.p.h.	o 74 m.p.h.	79 м.р.h.	84 mepehe	39 m.p.h.
Station				OB	No. o	Avera	Stand				ijŢ	JAG JAG	11	sə		чә		0 9	<u> </u>		-

TABLE 7 SPEED DATA

All Present  197  5.98	P.M. P.A.SENGER Indiana Last Pre 15 87 19 63.1 11 6.30	Non Non 112 63.59	Last   Previous Observation   Date   September   Time   12:30 - 2	Time 1	All All Present 95 2.38 95 2.38 95 95 95 95	T. 1966 2:30 P.M. 14:30 P.M. 5000 pt. Last bt. Last bt. 15.29	Report  UCKS  than  ounds  resent	5000 5000 or 12.5	pounds more Present
All  Last Present  227 197  52.9 53.75  6.91 5.96	PASSENGER C   Indiana	1 1 1 9 9 9	ndiana Present 110 01.20 7.70 0.0	Last 120 53.4 6.1)	All Present 9.6 2.98 0.79	Last 21 57.9 57.9	s than pounds Present 16 54.91		
All Last Present 227 197 52.9 (3.75 6.91 5.98	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	70900	ndiana Present 110 01.20 5.70 0.0	Last 120 53.4 6.14	All Present 9.0 2.9879	1.000 5000 1.000 2.1 5.7.9 5.29	s than pounds Present 16 54.94		
Last Present  227 197  52.9 53.75  6.91 5.96	- 19999		Present 110 01.20 5.70 0.0	Last 120 53.4 6.14	Present 9.0	Last 21 57.9 5.29	Present 16 74.94	Last 99 52.5 5.91	Present 80
227 197 • 52.9 63.75 6.91 5.98		63.9 6.59 0.0	110 Ch. 20 F. 70 0.0	120 53.4 6.1)	2.98 .79	21 57.9 5.29	16 54.9h	99 52.5 5.91	80 52.59
62.9 63.75 6.91 5.98		6.59	61.20 5.70 0.0	53.4 6.1)	2.98 3.79 0.0	57.9	16.42	52.5	52.59
36.		0.0	6.0	1,19	0.0	5 29	\	5.91	
	0	0.0	0.0		0.0		0.73		( 77
0.0 0.0		0.0		٠ •		0.0	0.0	0.0	0.0
0 0 0	0 0 0 0		0 0	00	0	0.0	0	0.0	0
	0.0 0.0	0.0	0 0	0.0	0.0	0.0	0.0	0.0	0
0.0		0.0	0	4.2	1, 2	0.0	0 0	5.0	3 8
0.0 1.0	0.0	0	0.0	3	11.1	0	्	10.1	, 21 12.5
,	1.7 1.2	3.6	1 8	20.8	28.1	0.0	18.75	25.3	30.0
9.2 8.6	13.9 9.9	4.5	1, 6.	50.0	1,2,1	28.6	112 B	54.6	1.5.0
50.000		17.0	16.4	88.3	84. 4	66.7	75.0	92.9	86.3
2.3	68.7 59.8	51.8	1,0,1	•	0	81.0	02 8	100.0	07. 5
20.2	1	80.71	84.6	0.001	100.0	100	100.0	I I	100.0
99	94.8 95.1	96.4	96.4	-		1	0.001	ŀ	0.001
98.2.100.0	98.3 100 0	98.2	100 0	1	100	1	100.0	1	100.0
100.0	0.0010.001	100.0	100.0	1 1	0 001	1	100.0	-	100.0
100.0	100.0	1	100.0		100.0	!	100.0	-	100.0



## TABLE 8 SPEED DATA

Station	ton 8	Highway	ay	U.S. 52	52	1	Location		L M O	1.0 Mile West of Klondike	f_Klond	ike		
9	No. of Lanes	This Observation Surface Date August 17, 19 Time 1:10 3:10	Type of Augus	Programment	7967 P. M.	Portland Cement 6	d Cement	Previ		Observation August 26		Weather Speed Report 1966	No. 83	
	-				PASSE	PASSENGER CARS						TRUCKS		
			1	ALL	Ind	Indiana	Non-Indiana	diana		ALL	Les: 5000	Less than	5000	pounds
	OBSERVATION		Last	Present	Last	Present	Last	Present	Last	Present	Last	Present	Last	Present
	No. of vehicles obs.		250	280	157	7 1/1	03	133	<b>.</b> [2	70	16	32	), G	, 6°
	Average spe	Average speed (m.p.h.	63.3	65 OL	~	63.98	64.0	66 22	56.3	51, 75	59.3	, 5, 0 <b>7</b>	55.2	r), 17
	Standard deviation		6,70	6.80		6.64	5.04	6.81	5 91	08	6.61	6.17	5 30	5.72
	24 m.p.h.		0	0.0		0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0
	29 m.p.h.		0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
	24 m.p.h.		0.0	0.0	0.0	0.0	0.0	0.0	0 0	0.0	0.0	0.0	0 0	0,0
g			0.0	0	0.0	0 0	0.0	0	0	ר כ	0 0	3.1.	0.0	7.5
3 <b>7</b> 6	ave	p•h•	9 -	ή·0		0.0	0	8	0	100	6.3	3 1	4.4	7 7
ţţ	й т 49 mopehe		3.2	1 )		2.0	0	α	11.5	12.1	6.3	4 6	13.3	13.0
AΕ	s s 54 m.p.h.		0	( ) ( )	8.0	7 7	5 5	, ,	20 5	ր 0	18 8	16.9	33 3	72.3
TTV	ੀ 59 m.p.h.	p.h.	22	17.5		23.1	19,4	11.3	67.2	75.3	43.8	62.5	1	81.5
′	Heden 190 of	p•h•	51.0	16 g	58.0	F.1, 1,	1,7.3	28 L	91.8	97.9	75.0	96.9	97.8	98.5
	4 4 69 m.p.h.					80.3	76.3	5.6°	0	0.66	100.0	100.0	100.0	98.5
	0 74 m.p.h.		96.8	92 5	ر د د	94, 5	97.9	2 00		100.0	1	100	:	100
	79 m.p.h.		98.8	98.2	98.7	99.3	98.2	0.20	ŧ	100.0	# 1	100.0	1	100.0
	84 п. р. h.	p•h•	100.0	100 d 100 o	$\neg$		100.0	100.0	ŧ 1	100 0	1	0 001	1	100 0
	39 m.p.h.	pehe		100.0	•	100.0		100.0		100.0		100.0		0.001



## TABLE 9 SPEED DATA



TABLE -10- SPEED DATA

	Llent)		00 pounds	Present	4.7	55.47	5.74	0.0	0.0	0.0	0.0	2.1	10.6	44.7	70.2	93.6	100.0	100.0	100.0	0.001	100.0
	No. Excellent		5000	Last																	٥
lmcos	Weather (Speed Report N	TRUCKS	Less than 5000 rounds	Present	37	57.76	9.60	0.0	0.0	2.7	5.4	8.1	16.2	37.8	56.3	70.3	89.2	97.3	100.0	100.0	100.0
of Che	Speed		15002	Last																	
2.0 Miles North of Chelmcos	Observation		All	Present	78	56.48	7.72	0.0	0.0	1.2	2.4	4.8	13.1	41.7	64.3	83.3	95.2	98.8	100.0	100.0	100.0
-0 M41	ous Obs Date Time			Last			3														
ľ	7		Non-Indiana	Present	54	65.17	6.78	0.0	0.0	0.0	0.0	0.0	0.0	1.9	18.5	50.0	79.6	88.9	96.3	98.2	100.0
Location	tic Cor Las		Non-Ir	Last																	
1	Asphaltic Concrete Last Pre	SSENGER CARS	Indiana	Present	195	62.31	9.34	0.0	0.0	0.0	0.0	3.1	9.7	18.5	35.4	62.1	81.0	90.8	6.96	0.66	0.66
	967 A.M.	PASSE	Ind	Last																	
U.S. 43	Moservation Surface Date August 21, 196 Time 9:00 - 11:30 A		LLA	Present	249	62.93	8.91	0.0	0.0	0.0	0.0	2.4	7.6	14.9	31.7	59.4	80.7	90.4	8.96	98.8	99.2
way	TAREO MILE 9-10			Last																	
10 Highway	This c			OBSERVATION	No. of vehicles obs.	Average speed (m.p.h.	Standard deviation	24 m.p.h.	29 mepohe	34 m.p.h.		44 m.p.h.	49 mopoho		59 m.p.h.			74 m.p.h.	79 m.p.h.	84 m.p.h.	39 mepehe
Station	No. of Lanes			Ö	No.	Aver	Stan			Зu	ŢŢ	3 <b>1</b> 6	T1	688	icl	ųə.	v l Je	0 9	<u></u>		
Stat	No.										S	т	γų	eΛ	TTV						



## TABLE 11 SPEED DATA

lent		pounds	Present	58	54.34	5.83	0.0	0.0	0.0	0.0	8.6	17.2	46.6	82.8	100.0	100.0	100.0	100.0	100.0	100.0
Excellent No. 83		5000 1000	Last	59	5), 2	6.11	0 0	0.0	0 0	0.0	6.8	17.0	54.2	79.7	ı G	100.0		1		
ort	TRUCKS	Less than 5000 pounds	Present	33	56.21	5.66	0.0	0.0	0.0	0.0	3.0	12.1	36.4	7 2 99	90.9	100.0	100.0	100.0	100.0	100.0
of Roche:  Wee n (Speed ar 2, 1966 3:15 P.M.		1.68 5000	Last	53	57.1	8	0.0	0	d	0	6.9	20.7	31.0	62.1	82 8	9.96	9.96	9		
3.0 Miles South of Rochester Weathe Vious Observation (Speed Rep Date September 2, 1966 Time 12:00 = 3:15 P.W.		All	Present	91	55.02	5.81	0.0	0.0	0.0	0.0	9.9	15.4	42.9	76.9	96.7	100.0	100.0	100.0	100.0	100.0
ous Obs. Time			Last	38	55.2	6.91	0.0	0 0	0	0.0	8 9	18.2	), A	73.9	38.6	98.9	98.9	000		
Pre-		diana	Present	61	63.08	6.57	0.0	0.0	0.0			3.3	6.6	31.2	59.0	83.6	98.4	100.0	100.0	100.0
Location  1c Concrete Last Pi  -		Non-Indiana	Last	51	62.8	8.88	0.0	0.0	0	2.0	3.0	0 7	11.8	25.5	5), 0	30.4	90.2	100		
Los Asphaltic	ASSENGER CARS	Indiana	Present	191	62.46	7 24	0.0	0.0	0.0	0.0	1.1	3.7	13.6		59.2	85.9	95.3	7 86		100.0
31 e 1967 P.M.	PASSE	Ind	Last	178	63.5	7.50	0.0	0.0	0.0	0.0	0.6	2.8	8 1	25.8	61.0	78,1	93.3	9 90	ф <b>.</b> 66	100.0
U.S. 31 Prof Surface August 21, 1967 1:30 -3:30 P.M.		ALL	Present	252		7.08	0.0	0.0	0.0	0.0		3.6	11.9		59.1	85.3				100.0
way rVYY e Au e 1:	d department		Last	229	63.3 62.61	7.88	0.0	0.0	0.4	0.0	1.3	3		25.8	50 8	78.6	92.6 96.0	97.1 98.8	9.66	0 001
Lanes This Observation Surface Date August 21, 19 Time 1:30 -3:30 P			OBSERVATION	No. of vehicles obs.	Average speed (m.p.h.	Standard deviation	24 m.p.h.	29 mepohe	9 34 m.p.h.		uei			7 59 m.p.h.		ф 69 m.p.h.	74 m.p.h.	79 m.p.h.	84 mep.h.	89 ш.р.h.
Station No. of Lanes				No	Av	St			au		7 <b>.</b>			rer VII		. ј	0 9	5		

## TABLE 12 SPEED DATA

	33-)		pounds	Present	7.7	52.43	7.80	, 00	0.0	0.0		4 + 4 V	29.8	61.7	7.56	100.0	100.0	100.0	100.0	100.0	100.0
	No. 6088		5000	Last	81	51.1	17.	0.0	0.0	0.0	0 1	10	85.4	77.1	95.8	0.00			•		
Americus	Report	TRUCKS	s than rounds	Present	36	53.14	6.76	0	0.0	0.0	0.0	5 6	27.8	61.1	83,3	97.2	100.0	100.0	100.0	100.0	100.001
	(Sp		Less 5000 r	Last	9	57. lt	8	0.0	0-0	0	0	9	2.5	27.5	62.5	5.0	000			1	
ile West of	September 11:00 A.M		All	Present	83	52,73	5.22	0.0	0.0	0.0	0.0	8.7	28.9	61.5	7.06	98.8	100.0	100.0	100.0	100.0	100.0
0.7 Mile	ous Obs. Date			Last	77	2.7	25	0	0	O	9	a	29.7	2.2	7.5	3.8	000	-	-		
-	Concrete Last Previous Observation Date September Time 11:00 A.D		Non-Indiana	Present	39	59.64	6.12	0.0	0.0	0.0	0.0	2.6	2.6	20.5	51.3	84.6	4.68	100.0	100.0	100.0	100.00
Location	ŭ		Non-Ir	Last	57	58.2	55	0.0	0.0	0-0	0 0	2.0	J. 1	22 2	10 7	980	0.001	1	1	!	1
	Asphaltic	PASSENGER CARS	Indiana	Present	177	59.65	8.49	0.0	0.0	0.0	0.0	1,7	11.3	26.6	7.67		88.7	96.6	97.7	7 66	7, 66
20.	e 1967 10 A.M.	PASSE	Ind	Last	987	9.89	99	0.0	0	0	0	,	- V	1 20	, ,	80 1	62.0	0.001	ì		
S.R.	Propression Surface August 25, 1 9:30 - 12:00		LIA	Present	216	55	8.10	0.0	0.0	0.0	0.0	1.9	9.7	25.5	50.0		6,88	0 97.2	98.2	99.5	3 66
Way	r Wello			Last	213	58.6	6	0	0.0	D.O.	o q	8 0	0	96.8				0.00		_1	
n 12 Highway	of Lanes 2 This Observation Surface Date August 25, 1 Time 9:30 - 12:00			OESERVATION	No. of vehicles obs.	Average speed (m.p.h.	Standard deviation	24 m.p.h.	29 m.p.h.	24 m.p.h.		uei	17	9 9 54 m.p.h.			de 69 mepehe	74 m.p.h.	79 m.p.h.	84 m.p.h.	89 тереће
Station	No. of				Z	4	တျ				_			ev.					-		

TABLE 13 SPEED DATA

			00 pounds	Present	346	56.94	5.25	0.0	0.0	0.3	9.0	2.0	7.8	27.8	66.2	95.7	7.66	100.0	0001	100.0	100.0	
	No. 83		5000	Last	105	54.9	50	0.0	0.0	0	0	7	10.8	36.4		50.5	0.0	1			1	
	(Speed Report N	TRUCKS	Less than 5000 pounds	Present	80	59.96	7.55			0.0	0.0	0.0	10.0	23.8	46.3	73.8	88.8	97.5	8 80		100.0	
tions	New Me		Les:	Last	30	56.1	6 70		0.0	0		2 7	7	36.0		02.1	S	0.00	1	!		
See Individual Stations	Previous Observation Date Time		All	Present	426	57.5	5.86	0.0	0.0	0.2	0.5	1,6	8.2	27.0	62.4	91.6	97.4	99.5	8 66	100.0	100.0	
Indiv	ous Obs Date			Last	180	55.3	710	0.0	0	q	7	. 🗸	2.3	S 3	20 2	07.2	93.9	0 00	•	ı		
	Last Previo		Non-Indiana	Present	398	68.34	6.97	0.0	0.0	0.0	0 0	0.0	0.8	3.8	10.3	28.1	53.0	83.7	0.96	0.66	99.5	
Location	3		Non-Ir	Last	250	63.3	6.06	0.0	0.0	d	0	o o	60	5.7	25.7	58.3	83.1	96.3	98 <b>.</b> í	100.0		
1		ASSENGER CARS	Indiana	Present	653	66.42	6.86		0.0	0.0			8	5.1	15.0	38.0	67.8	88.5			100.0	
ate	υ	PASSE	Ind	Last	501	62.1	, OO	0.0	0	Q Q	0	0	1 7	В 5	30 0	55.7	89.5	4	•	7.66	8 66% 5'H	• 11 • 14 •
Intersta	of Surfac		All	Present	1051	67.14	6.06			0.0			0.8	4.6	13.2	34.3	62.2				* 00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Car. No w
way	restion			Last	051	, , ,			0	9		, ,	, c	L L	08.1	62		07.3 86.7	2 00	7 66 8 60	*	<b>^</b> 111 <b>6</b>
Station 1, 2,3,4, Highway	No. of Lanes This Observation Surface Date Time			OESERVATION	No. of vehicles obs.	Average speed (m.p.h.	Standard deviation	24 m.p.h.	29 m.p.h.	24 m.p.h.	Ţί	eve ner	-TJ	76 8 8 54 m.p.h.	ŗcŢ	o ye	<b>де</b>	O 74 mepehe	79 m.p.h.	84 m.p.h.	• ч• с ш• б ш	



TABLE \_\_14\_ SPEED DATA

				ds	ent		9		,						3	8	7	3	9	0.	q	0
	83			pounds	Present	288	54.06	6 21	0	0	0.0	1 1	8.3	20.8	49.3	78.8	97.2	99.3	100.0	100.0	100.0	100.0
	9.05			5000 2000	Last	270	52.8	5 81	0.0	0.0	0.0	2 3	8	25.6	56.3	88.9	9 00	100,0			1	L I
	ther Report		TRUCKS	s than	Present	116	56.99	7.35	0.0	0.0	0.0	0 0	4.3	16.4	39.7	59.5	85.3	9.96	100.0	100.0	100.0	100.0
	Speed )			Less 5000 p	Last	32	58.7	30	0.0	0.0	0.0	0	3.7	4.9	22.0	52.4	78 1	(C)	98.8	90,	> 1	1
-See Individual Stations	Previous Observation Date			All	Present	707	54.90			0.0	0.0	2.0		19.6	46.5	73.3	93.8	98.5	100.0	100.0	100.0	100.0
Indivi	ous Obs	Time			Last	352	54.2	7 15	0	0	0.0	9	7	20.7	18.3	80.4	9 10	99.7	200		TOO T	-
		H		Non-Indiana	Present	410	65.73	60.9	0.0	0.0	0.0	0 0	0.2	0.7	4.2	11.7	39.5	74.9	93.7	98.3	99.8	100.0
Location	Last			Non-Ir	Last	339	64 3	م 20 د		0.0	0.0	0	. m	1 8	5.6	18.9	1,8,7	78.2	96.8	00	100.0	
			SSENGER CARS	Indiana	Present	559	64.38			0.0	0.0	0 0		2.0	9*9	20.0	9 67	79.3	95.0	98.9	99.8	100.0
	e		PASSE	Ind	Last	639	63.1	7.02	0		0	6 0	, r	3.6	10.2	25.7	7 9 7	86.3	05.0	00	100.0	2
4 Lane	of Surfac			ALL	Present	696	62 5 64.95			0.0	0.0			1.44		16.5	45.3	77.4	7.76	98.7	99.8	100.0
way	rvatio	a)			Last	978	62 S	100			9		0 0	0	8	23 3	, c	30.0	\ - - -	2 00	1000	T T
Station 5, 6, 7, 8 Highway	No. of Lanes This Observation Surface Date	Time			OBSERVATION	No. of vehicles obs.	Average speed (m.p.h.	Standard deviation	24 m•p•h•	29 m.p.h.	24 m.p.h.	Ţį	J9TJ	H to 49 mopoho	89		че	T v de me pehe	0 74 m.p.h.	79 m.p.h.	84 m.p.h.	39 m.p.h.
Sta	No.			<u></u> ,		L									<b>9</b> 41	TIV						

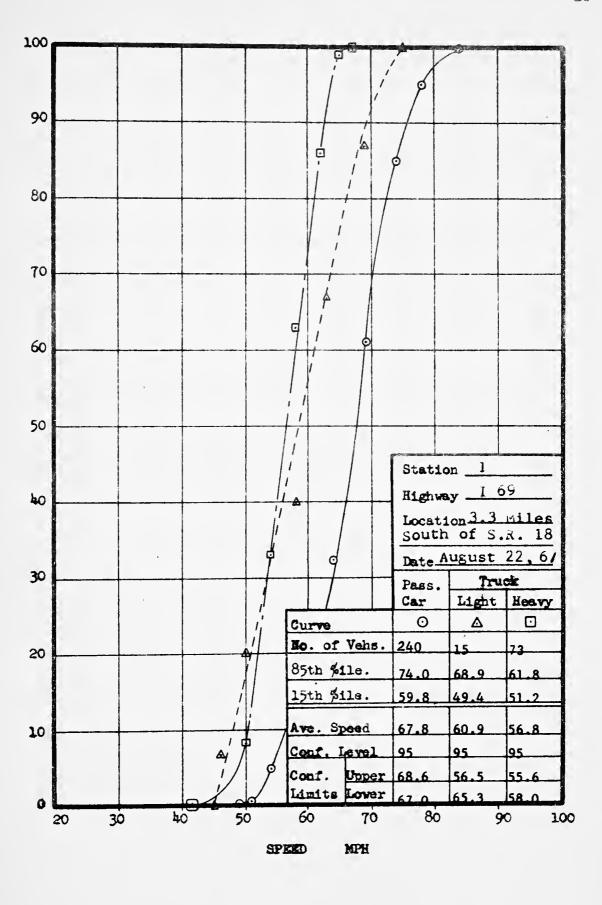


TABLE 15 SPEED DATA

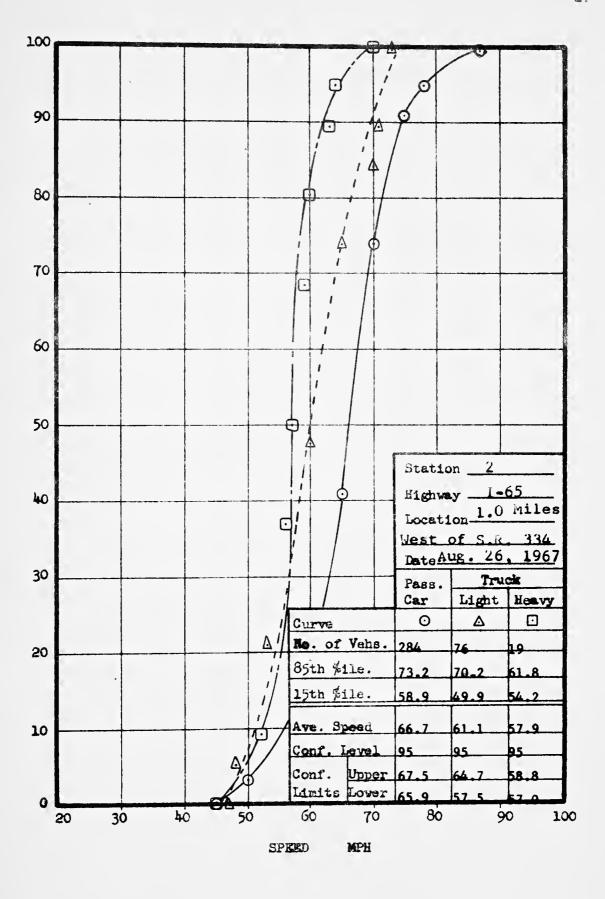
on 9,10,11,12 Highway 2 Lone  f Lanes This Observation  The OBSERVATION  No. of vehicles obs. 899 945  All  All  All  24 m.p.h.  29 m.p.h.  49 m.p.h.  60 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0
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TABLE 16 SPEED DATA

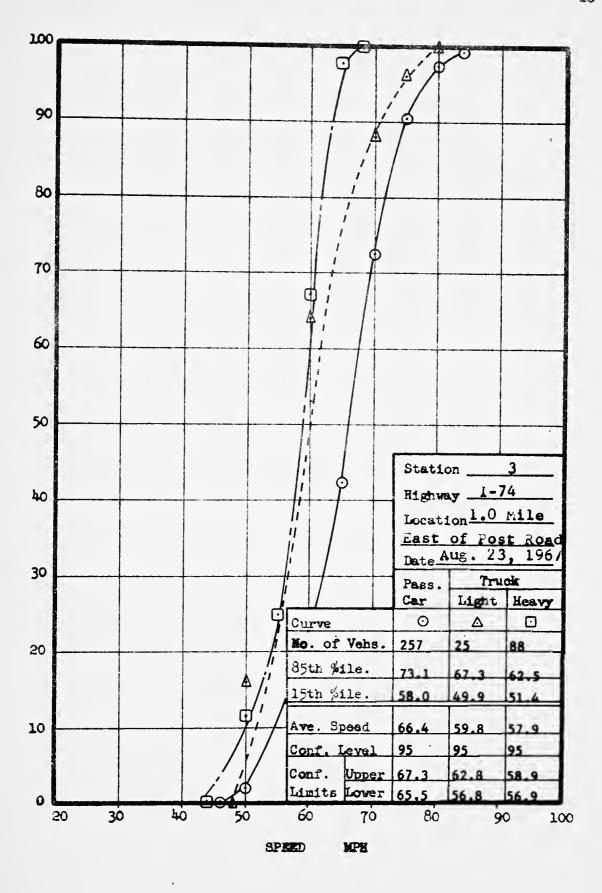
			00 pounds	Present	870	54.62	6.40	0.0	0.1		2 1	7.0	, 9.81,	1.5,	76.1	96 9	99.5	100.0	100.0	100.0	100 0	
	No.		5000	Last	289	52.7	5 75	<i>(</i> 1.0	0.0	0.0	2.2	75	26.4	57.2	30 B	98.8	ן ס ססנ					
S	(Speed Report N	TRUCKS	Less than 5000 pounds	Present	355	56.26	7.89	0.0	0.0	9 0	2 3	6.2	19.2	43.7	64.2	85.1	95.2	99.2	7.66	100.0	100 0	
tation	NeedS)		1es 5000	Last	252	56.7	7.03		0.0	0.0	1°0	8 8	13.9	32.9	7 7	85.7	08.0	00	100 0 99.7		ı 1	
See Individual Stations	Observation		All	Present	1225	55.09	6.00	0.0	0.1	0.5	2 1	6.8	18.8	7 77	72.7	93 5	98.3	99.8	9.9	100.0	100 0	
ee Ind				Last	030	2 0	6.37		0.0	0,1	7	1 00 - [	0 0 0	50.0	32 1	95.3	00 5		00[	0.001	1	
	Previ		Non-Indiana	Present	1072	65.77	7 00	0.0	0.0		0.1	0.4	1.2	5.7	17.1	42 1	69.8	90.8	7.76	4.66	99 8	
Location			Non-L	Last	1012	1 0	6.74	9	0.0	0.1	c C	0.7	- 0	11.7	30.1	61.7	84.4	96.9	00	100.0	l J	
1		PASSENGER CARS	Indiana	Present	1893	63.87	7.69	0.0	0.0		0.0	6.0	3.9	11.0	25.8	52.2	78.2	92.8			8 66	
tems	ω	PASSE	Ind	Ind1 Last		61.8			0.0	0.0	1		3.7	13.2	· I	65.6	86.9	, α	d	99.8	*99.9	I.P.H.
All Systems	n Surfac		All	Present	2965	9				0.0			2.9					)		99.6	J99 8	* One Car 90 M.P.H.
way	rvario			Last	2828 2965		6.38 7 SA	0.0		0.0		0.0	3.5	12,491	31.6 22.7	64.2	86.0 75.	96.9	06	0 0 0 0	100.0	* Oue
1 thru 12 Highway	Lanes. This Observation Surface Date			OBSERVATION	No. of vehicles obs.	Average speed (m.p.h.	Standard deviation	24 m.p.h.	29 m.p.h.			nei	{}	ва 54 ш.р.оh.	7 59 m.p.h.	10	3.5		79 m.p.h.	84 m.p.h.	89 m.p.h.	
Stat1on	No. of Lanes.				No	AV	St			30			3.T.T	6A 89	Tol	rye	<b>Л</b> Ј	to ?	<u>\$</u>			



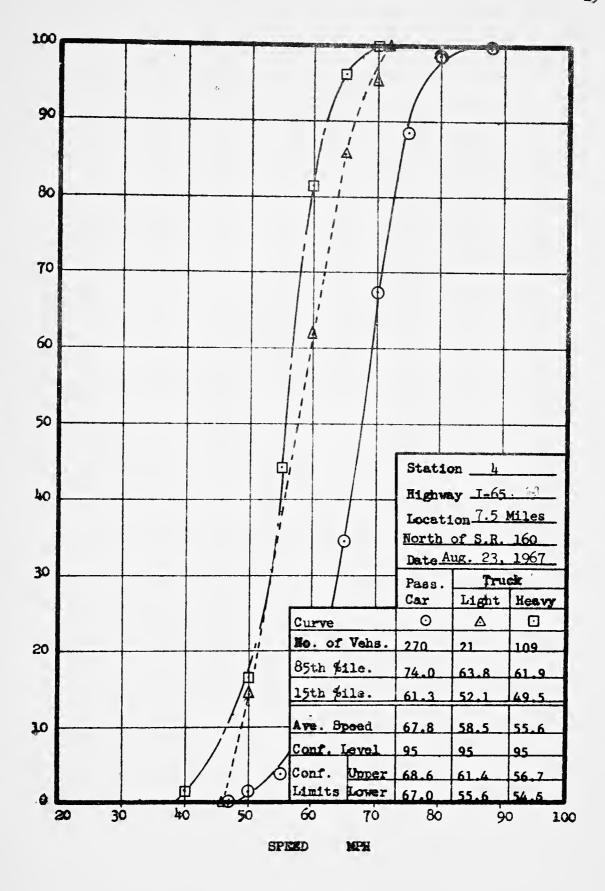
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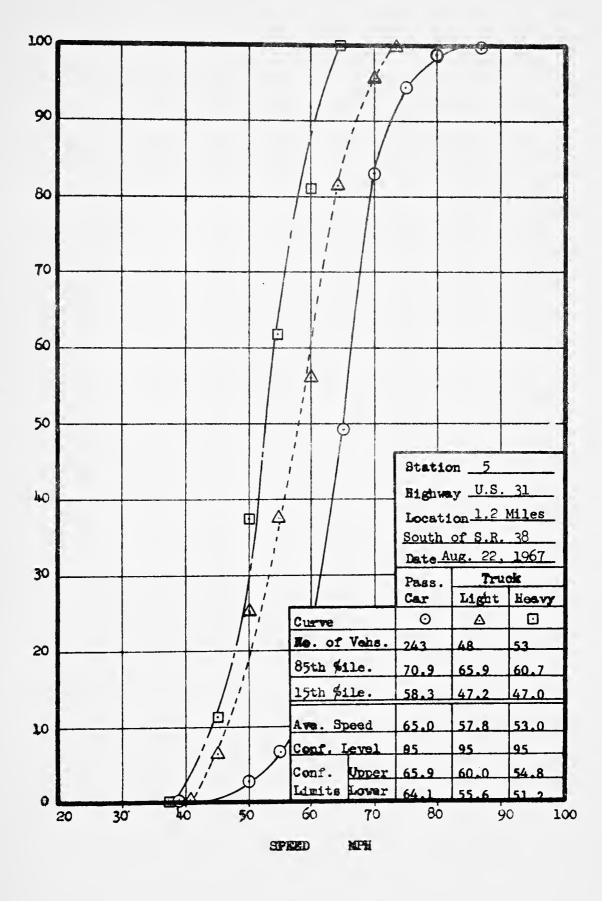
PERCENTILE

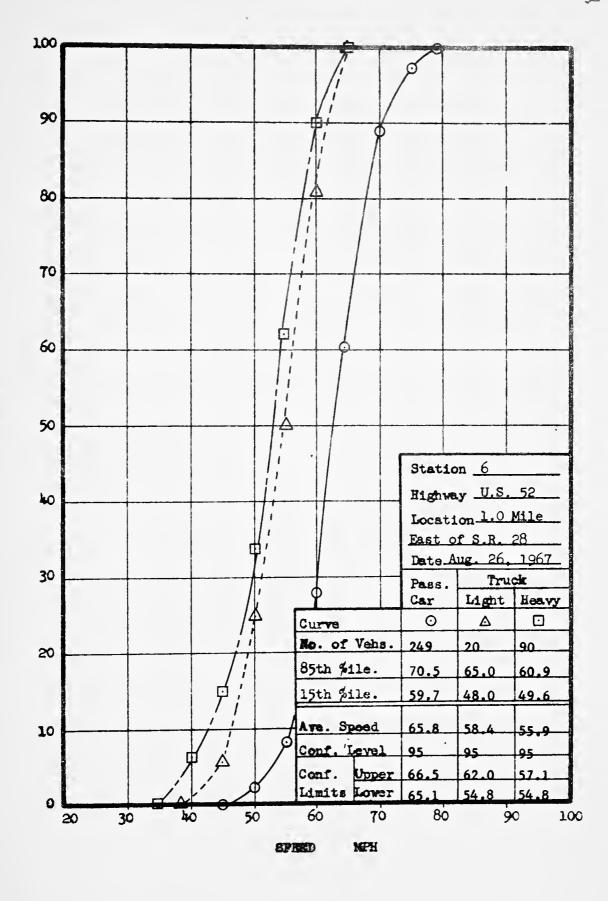


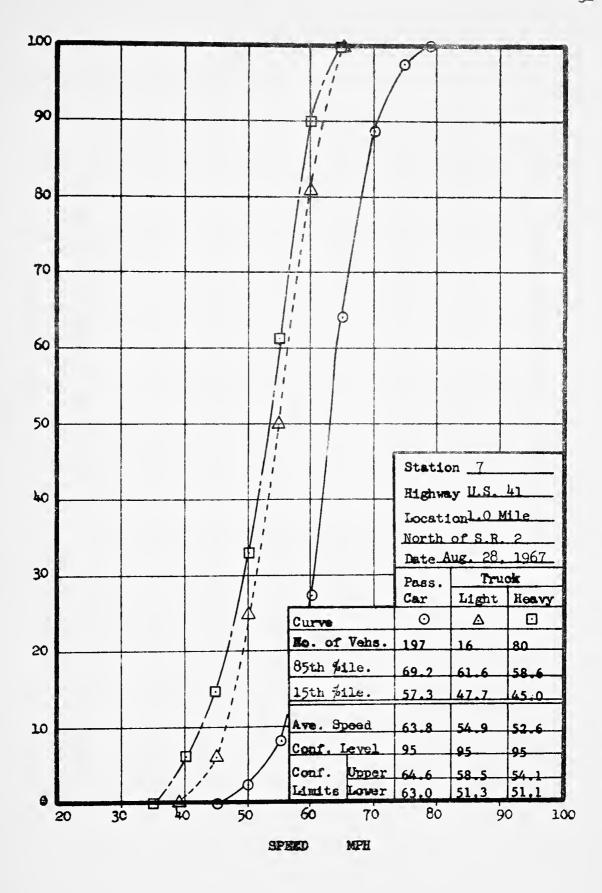
PERCENTILE

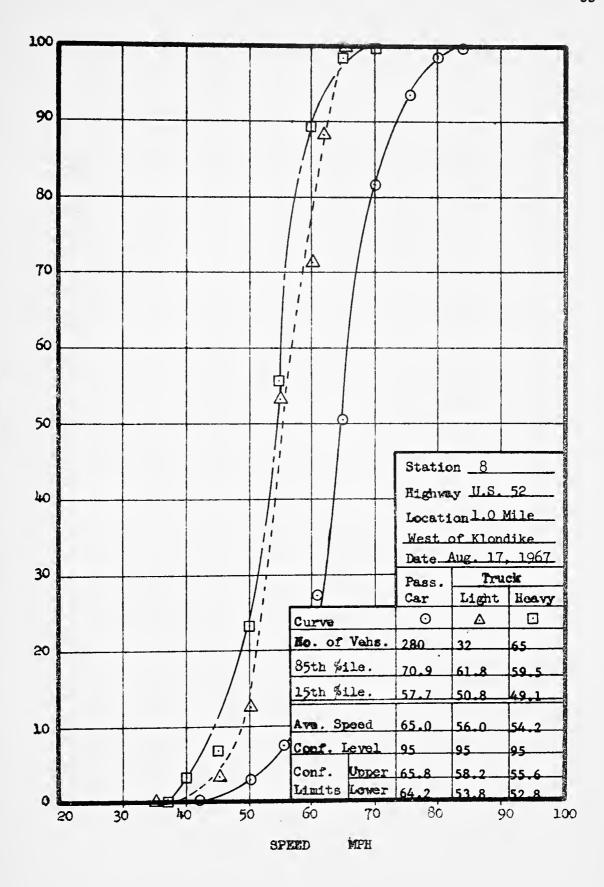


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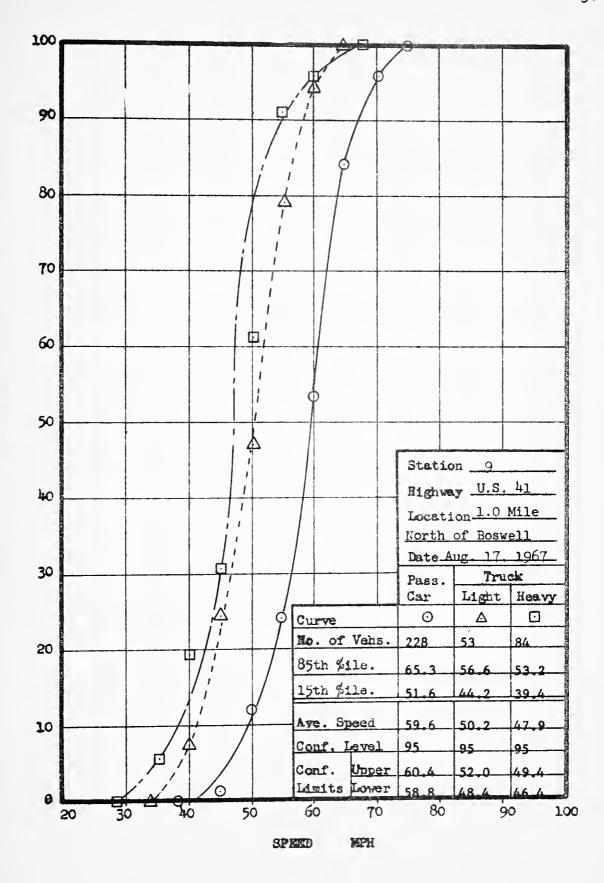




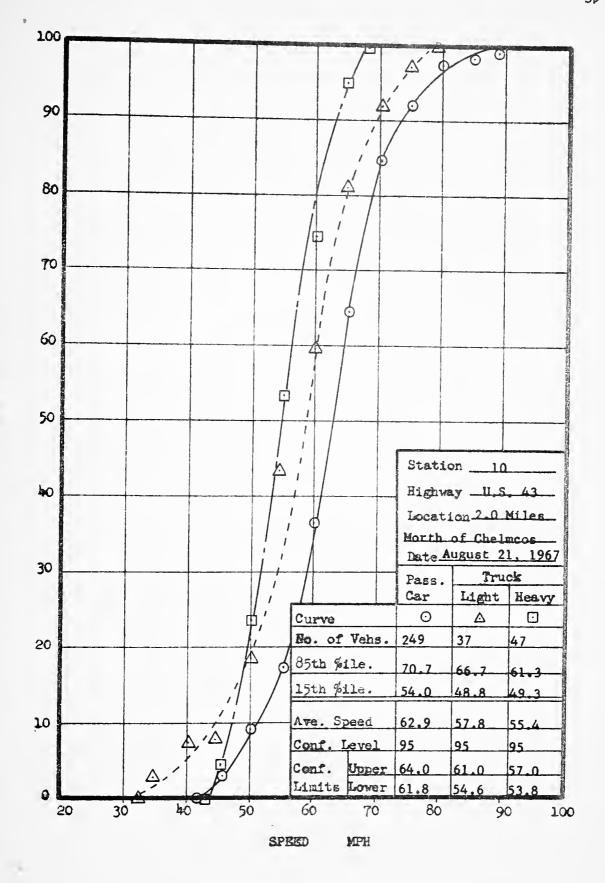




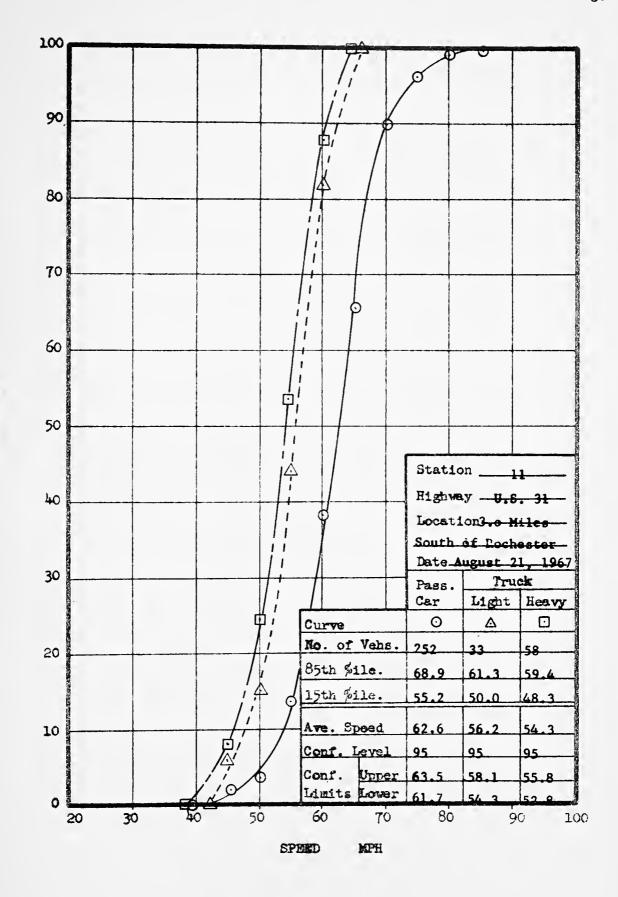


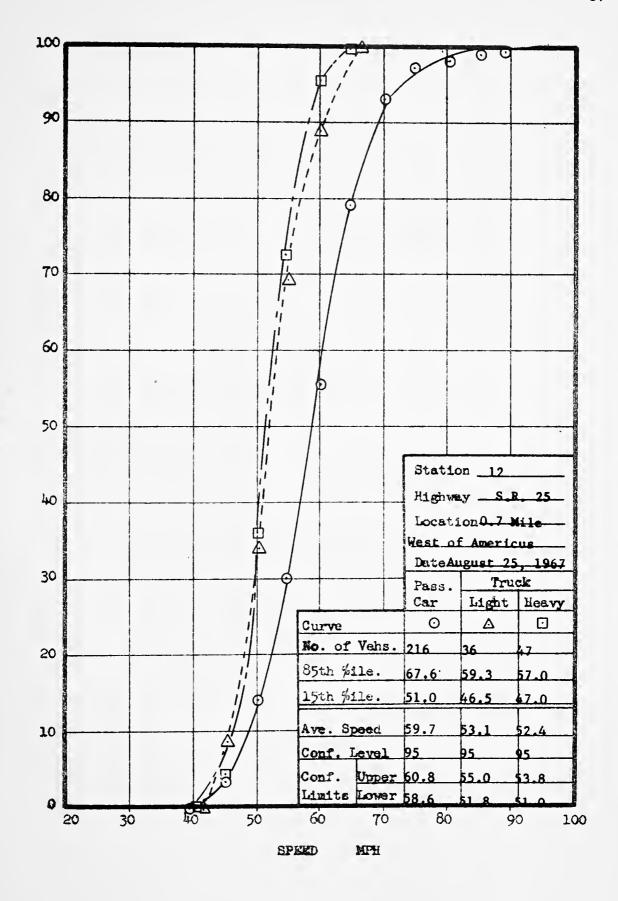


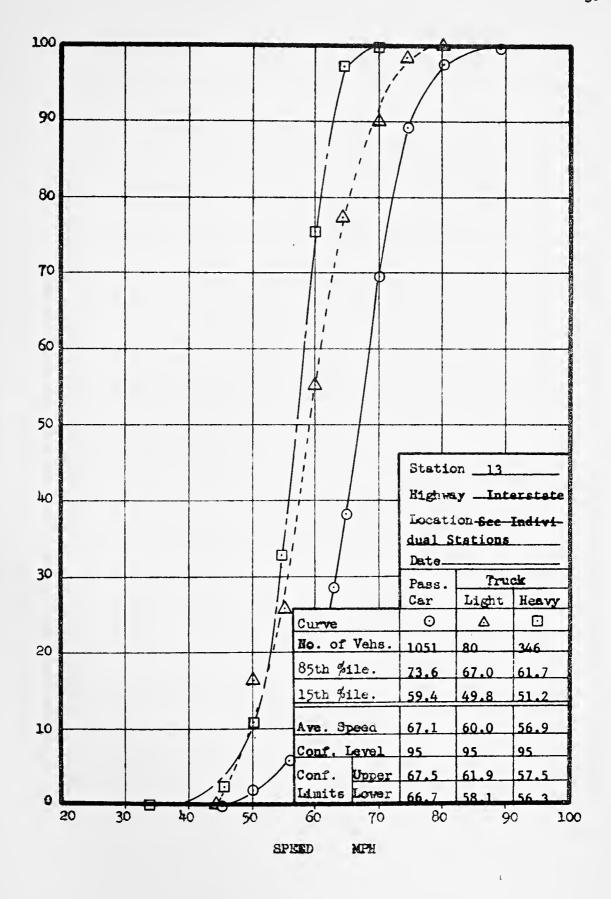




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